the effective potential difference, as measured by a voltmeter, being the same in the two cases. The induction, if there is no magnetic leakage, will be

$$-I = (N_1/R_1q)(5 \cos 20t + 4\cdot7 \cos 600t + 0\cdot11 \cos 1800t),$$

the term which was so insignificant, which had only 1/800th of the importance of the most important term in practically estimating the volts, is now greater than what is usually taken to be the greatest term when we come to deal with the actual induction. Magnetic leakage will not much affect this condition of things, but it will greatly diminish the importance of the higher harmonics.

When experimenters say that they keep the primary volts constant, they mean that they keep the effective primary volts constant. It is obvious from the above considerations that different methods of keeping effective volts constant will produce very different kinds of induction. The effects produced by an exciting current in a choking coil or unloaded transformer are evidently very complicated. Let the dynamo have a perfectly pure simple harmonic law of electromotive force; we have seen that even when no hysteresis is assumed, the current will possess large harmonics and the induction possesses corresponding harmonics. The energy wasted in the creation of these harmonics may be called "hysteresis" loss, but it cannot be altogether the same as the hysteresis loss in slowly-performed cycles of magnetisation; it will be different if the dynamo does not follow a simple harmonic law in its electromotive force, and the apportioning of the small higher harmonics to the primary voltage and to the induction must greatly depend upon the self-induction of the dynamo machine.

II. "On the probable Effect of the Limitation of the Number of Ordinary Fellows elected into the Royal Society to Fifteen in each Year on the eventual total Number of Fellows." By Lieut.-General R. STRACHEY, R.E., F.R.S. Received April 13, 1892.

The discussions that arose in connection with the revision of the Statutes of the Royal Society during the years 1890 and 1891, led me to endeavour to obtain definite data on which to found a trustworthy opinion as to the effect of the existing limitation of the number of yearly admissions, on the eventual total strength of the Society, and the probable result of increasing the number beyond fifteen, the present limit.

The facts bearing on this subject, so far as I have been able to

collect them from the records of the Society, are embodied in the Tables annexed to this communication, for the proper appreciation of the significance of the figures in which a few preliminary explanations are necessary.

The Anniversary of the Society being fixed for the 30th November in each year, the customary record of the number of Fellows for any year refers to the number on that date. I have throughout regarded the date to which this number applies as being the 1st January of the following year.

The annual election of Ordinary Fellows usually takes place in the first or second week of June in each year. I have considered the date to be the 1st January of the same year.

The lapses, whether from death or other causes, have been treated as having occurred at the end of the calendar year in which they take place.

These assumptions have been made to simplify the various computations that the investigation required (which have been sufficiently troublesome as it is), and owing to the considerable period dealt with, forty-three years, the results will not, I believe, be sensibly affected thereby.

Unless it is otherwise specifically stated, the numbers refer exclusively to the *Ordinary Fellows*, elected at the regular Annual Meetings fixed for the purpose.

So far as I have been able to ascertain (for the earlier records in many particulars are defective), the number of Ordinary Fellows elected since 1848 has been 15 in each year, except on four occasions; in two years the number having been 14, and in two years 16; the average, therefore, is 15 yearly.

During the period since 1848, the number of *Royal* and *Honorary* Fellows has been about 5, and the *Foreign* Members about 50; these are included in the total number of Fellows shown in the Annual Reports of the Council, but will not be further considered in what follows.

The rules under which certain privileged classes have been admitted as Fellows, in addition to the *Ordinary* Fellows, have varied somewhat since 1848, but at present, apart from the persons eligible for the classes of Fellows above excluded, the only persons so privileged are Privy Councillors. The total number of *Privileged* Fellows elected since 1848 seems to have been 75, which for 43 years gives an average of 1·75 per annum.

Table I contains a summary of the available data relating to the total number of Fellows since 1848.

The total number, excluding Royal, Honorary, and Foreign Fellows, at the commencement of 1848 was 768. I am not able to say how many of these were Fellows elected in the ordinary way, and how

many were privileged, but this has no importance for my present object. From 1860 onwards the distinction between the three classes, those elected before 1848, Privileged Fellows, and Ordinary Fellows, is exhibited.

At the end of 1890, the total number of Fellows, excluding the Royal, Honorary, and Foreign Classes, was 463; of whom 26 were Fellows elected before 1848; 36 were Privileged Fellows elected since 1848; and 401 Ordinary Fellows elected since 1848.

Hence it appears that the reduction of number of Fellows, of the three classes last referred to, has been 305, and as the number of admissions of the Privileged class has not been very materially affected by the changes in the rules relating to them, it follows that virtually the whole of this large reduction is a consequence of the restriction, to 15, of the number of Ordinary Fellows elected yearly.

As the ages of the 768 Fellows who constituted the bulk of the Society in 1848 are not known, and as the conditions of election before that year differed materially from what they have been since, no very useful conclusions can be drawn from the rate of their diminution since 1848.

Assuming, however, that the number of Privileged Fellows in 1848 was, as is probable, about 50, there would remain 718 Ordinary Fellows, of whom in 43 years 692 lapsed, or at an average yearly rate of 2·24 per cent., that is rather more than 16 a year. This rate, as I shall show subsequently, does not differ greatly from that which has prevailed among the Ordinary Fellows elected since 1848, and it may therefore be presumed that the average age of the Fellows in that year did not differ greatly from the average age since.

Table II gives, as far as available data admit, the ages at the time of election of all Fellows elected since 1848; and shows the number of years they severally survived, the average age at election, the number and average age of those who were alive in 1891, and the greatest and least ages of Fellows elected in each year.

From this table it will be seen that there has been a gradual small increase in the age at election; the average for the first 10 years having been 42·2; for the second 10 years, 43·0; for the third 10 years, 44·8; and for the last 13 years, 45·2.

The accuracy of these conclusions may be somewhat affected by the greater number of unknown ages in the earlier years, the age when unknown, having been taken at the average of the group of years in which the election took place.

The least age at which any Fellow has been elected is 24, one such case being recorded. The average minimum at any election is slightly under 30, and the average maximum is rather over 63, one election at an age of 87 is recorded, and several above 70.

The oldest survivor of the Fellows elected since 1848, who alone are dealt with in this table, was 86 years of age in 1891.

The average age at election was 43·9, and the average age of all the Fellows in 1891 was 58·4.

Table III records the numbers of Ordinary Fellows elected in each year, and remaining alive in each year after election, until 1891.

From this it will be seen that during the last ten years the numbers have increased by 46; in the previous ten years the increase was 68, or 22 more ; and in the ten years still earlier the increase was 111, or 43 more than the last. If the decrease of growth for the ten years after 1890, takes place in a similar ratio to that which took place between 1870–80 and 1880–90, we might anticipate an increase of only 11 up to 1,900, or probably a smaller number.

In order to obtain a satisfactory comparison between the lives of the Fellows, and those of the general population as shown in the accepted life tables, I have calculated, from the known ages of the Fellows at election, and the known dates of the deaths that have occurred among them, the average age of the Fellows remaining alive in each year. From these ages I have computed, from Dr. Farr's tables, the probable number of Fellows that would survive from year to year, assuming the initial number to be 15.

From Table III, above referred to, have been ascertained, the number of Fellows surviving in each successive year after election, and thence has been obtained the average number surviving from an initial number 15.

The results of these computations will be found in Table IV.

The second column in this table shows the number of lives dealt with for each year after election. The first entry 645, is the total number of Fellows elected in the whole 43 years. The next column to the right gives their aggregate ages, and the next their average age 44·9, in their first year. Following the same line to the right, we find the average number of Fellows elected, and in their first year.

Passing to the second line of the table, 619, immediately below 645, is the total number of Fellows remaining in their second year from the elections of 42 years; this is succeeded, in the columns to the right, by their aggregate ages in their second year, and their average age, and the average number in their second year, out of 15, the average number elected.

The third line gives the same data for the third year of Fellowship, and so on throughout, the last line but one showing that in their 42nd year there remained 6 Fellows from the elections of 2 years, with an aggregate age of 444 years, and an average age of 74·0 ; the average number surviving in their 42nd year, out of the 15 elected, being 3.

The sixth column of the table gives the successive sums of the

numbers in the fifth column, and therefore indicates the aggregate number of Fellows that will, on the average, be surviving in each successive year of Fellowship, the number elected in each year being always supposed to be 15.

It will be seen that the total for the 43rd year is 397·0, whereas the actual number surviving, shown in column XI, is 401. This difference is of course due to the number 397, representing what the result would be if the average rates of election and decrease prevailed, instead of the actual rates for the separate years ; and it is probably sufficiently accounted for by the fact already pointed out, of the gradually increasing age at election in the later years, which will lead to the lives in the earlier years of the series being somewhat better than the average. Column XI shows the *actual* results for successive years corresponding to the average results given in column VI. The differences will be seen to be somewhat irregular, but nowhere to be of importance.

Column VII gives the aggregate ages of the numbers surviving in successive years, as shown in column V, and from it is deduced the average age of the whole number of Fellows shown in column VI, 397, which is seen to be 57·7 years, a result differing slightly from that obtained from the actual ages of the Fellows surviving in 1891, which was shown to be 58·4. The cause of this difference has already been indicated.

Columns VIII and IX supply the results that would be obtained by applying to an initial number of 15, the rates of mortality in Dr. Farr's tables, for the ages in successive years given in column IV. Column X contains the ratio of column VI to column IX, and indicates that throughout the whole period of 43 years the actual results are somewhat better than the tabular results, or that the lives of the Fellows are better than the ordinary lives, and that this advantage leads in the 43rd year to the actual number of survivors being rather more than 5 per cent. in excess of that which would be given by the life tables, or of about 20 on a total of 400.

An examination of this table will show that with the exception of the last six or eight years, in which the number of lives dealt with at last becomes very small, the figures indicate a very regular and consistent progression, and it will practically be quite safe to assume that the series in column VI may be extended on the basis of the ordinary life tables, subject to the addition of 5 per cent. on the total amounts obtained from these last.

Hence it will be found that in 10 years after 1891 the aggregate number of Fellows is not at all likely to be increased by more than 15, that the final result may be as little as 410, but is not likely to be more than 420, or at the outside 425.

The results of this enquiry are shown graphically in the accom-
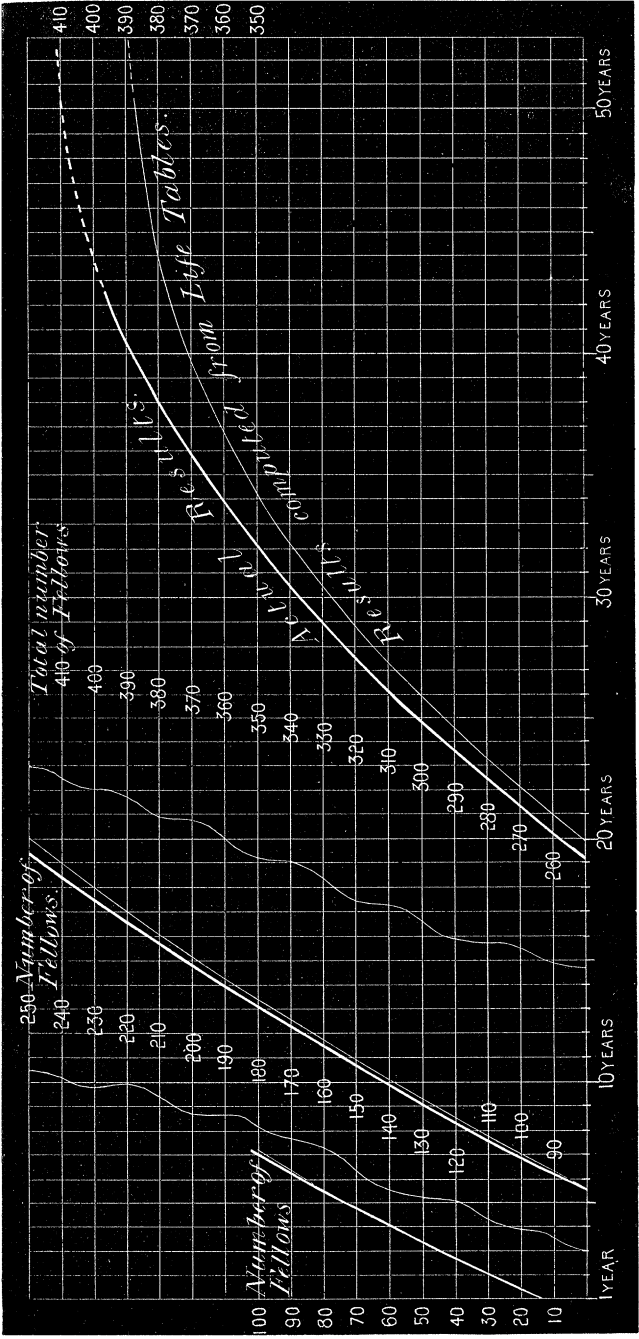
Graphical representation of chief results given in Table IV.

panying diagram, in which the thick line shows the progressive series of actual numbers contained in column VI, and the thin line those in column IX derived from the life tables. The dotted prolongation of the thick line in a direction conformable to that of the thin line, will be seen almost necessarily to fall below the horizontal line indicating a total strength of 420.

In an earlier part of this paper I mentioned that the rate of decrease of the Ordinary Fellows elected before 1848 did not appear to differ materially from that which has prevailed subsequently.

Taking the number of Ordinary Fellows elected before 1848, and then alive, at 718, it will be found that in 12 years (1860) the number was reduced to 422, which is about 60 per cent. of the original number; after 24 years (1872) the number fell to 206, which is about 30 per cent. of the original; and in 36 years (1884) there remained only 65, which is about 9 per cent. of the first number.

Assuming that the average age of the 718 Fellows elected before 1848, and then alive, was not materially different from the average age (58) of the Fellows elected after 1848 and alive in 1891, when it has probably become nearly stationary, it may be inferred that the lapses among a body of Fellows of that age will correspond to the lapses among the Fellows alive in 1848. Now, from Table IV it will be seen that of the Fellows elected after 1848, the average age in their 17th year was 58·3 years, which is almost exactly the average age of the whole body. Further, it is shown that of the supposed original 15 there remained 10·9 in the 17th year, of the age above mentioned, 58·3. This number was reduced in 12 years to 6·7, which is nearly 60 per cent. of the number in the 17th year, and again falls after 12 years more to 3·7, which is not very different from 30 per cent. of the starting number, and after 12 years more the number will be seen to be likely to be less than 1·0, which again will not differ materially from 9 per cent. of the original 10·9. These proportions, it will have been observed, are those above shown to hold in the case of the Fellows elected before 1848.

On the whole it seems to be established that the present restriction to 15 of the number of Ordinary Fellows elected in any year will lead to an eventual maximum number not exceeding 420; and that the ultimate increase of the total strength of the Society, for each additional Fellow elected in excess of 15 may be taken at 28, so that an increase of the annual number of Ordinary Fellows elected to 18 would lead to an ultimate total of 500 such Fellows.

Table I.—Summary of Numbers of Fellows of the several classes remaining in the Society in each year from 1848 to 1891.

Year.	Total at the commencement of year.	Privileged Fellows.	Fellows elected before 1848.	Ordinary Fellows elected from 1848.
1848	768		768	
9	751		737	14
1850	748		719	29
1	736		692	44
2	720		661	59
3	707	Not separable.	636	71
4	701		616	85
5	688		588	100
6	671		556	115
7	661		535	126
8	658		517	141
9	647		495	152
1860	637	51	422	164
1	621	54	391	176
2	607	51	368	188
3	606	49	356	201
4	602	50	338	214
5	599	49	324	226
6	586	49	300	237
7	572	42	281	249
8	564	40	267	257
9	548	35	247	266
1870	544	36	229	279
1	544	38	219	287
2	542	38	206	298
3	535	38	197	300
4	524	38	177	309
5	525	38	166	321
6	515	42	148	325
7	511	42	136	333
8	505	43	122	340
9	501	42	116	343
1880	488	42	101	345
1	486	42	89	355
2	480	40	82	358
3	477	43	71	363
4	473	41	65	367
5	468	38	60	370
6	465	36	55	·374
7	464	34	49	381
8	465	33	45	387
9	469	36	38	395
1890	466	37	32	397
1891	463	36	26	401

Table IV.—Showing for successive Years of Fellowship the actual and average Numbers and Ages of Survivors, and a Comparison with Results calculated from Dr. Farr's Life Tables.

| Successive years of fellowship. | Number of survivors in each year. | Aggregate ages of survivors in each year. | Average age of survivors in each year. | Average results for yearly elections of 15 Fellows. | | | Results computed from Dr. Farr's life tables. | | | Aggregate number of Fellows elected since 1848 surviving in successive years. |
| | | | | Number of survivors in each year. | Aggregate of survivors from successive elections of 15. | Aggregate age of survivors of one election of 15. | Number of survivors in each year. | Aggregate of survivors from successive elections of 15. | Ratio of actual average aggregate to computed aggregate. | |
I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.
1	645	28,972	44·9	15·0	15·0	674	15·0	15·0	1·000	14
2	619	28,515	46·1	14·8	29·8	679	14·8	29·8	1·000	29
3	600	28,031	46·7	14·6	44·4	684	14·5	44·3	1·002	44
4	575	27,370	47·6	14·4	58·8	684	14·3	58·6	1·003	59
5	557	27,067	48·6	14·3	73·1	694	14·0	72·6	1·007	71
6	536	26,474	49·4	14·1	87·2	697	13·8	86·4	1·009	85
7	512	25,872	50·5	13·8	101·0	699	13·5	99·9	1·011	100
8	493	25,408	51·5	13·7	114·7	706	13·3	113·2	1·013	115
9	472	24,752	52·4	13·7	128·2	707	13·0	126·2	1·016	126
10	449	23,994	53·4	13·2	141·4	706	12·7	138·9	1·018	141
1	427	22,962	53·8	12·9	154·3	696	12·4	151·3	1·020	153
2	407	22,197	54·5	12·7	167·0	696	12·1	163·4	1·022	165
3	387	21,420	55·3	12·5	179·5	691	11·8	175·2	1·025	176
4	367	20,599	56·1	12·2	191·7	687	11·5	186·7	1·026	188
5	340	19,303	56·8	11·7	203·4	666	11·2	197·9	1·028	201
6	315	18,116	57·5	11·3	214·7	647	10·9	208·8	1·028	214
7	295	17,203	58·3	10·9	225·6	637	10·6	219·4	1·029	226
8	277	16,356	59·0	10·7	236·3	629	10·3	229·7	1·029	237
9	255	15,255	59·8	10·2	246·5	610	9·9	239·6	1·029	249
20	239	14,488	60·6	10·0	256·5	604	9·6	249·2	1·029	257
1	220	13,443	61·1	9·7	266·2	585	9·3	258·5	1·030	266
2	204	12,651	62·0	9·3	275·5	575	8·9	267·4	1·030	279
3	186	11,685	62·8	8·9	284·4	556	8·6	276·0	1·030	287
4	171	10,892	63·7	8·6	293·0	545	8·3	284·3	1·030	298
5	154	9,896	64·3	8·1	301·1	521	7·9	292·2	1·030	300
6	141	9,177	65·1	7·8	308·9	510	7·6	299·8	1·030	309
7	123	8,047	65·4	7·2	316·1	473	7·2	307·0	1·030	321
8	113	7,449	65·9	7·1	323·2	466	6·9	313·9	1·030	325
9	100	6,669	66·7	6·7	329·9	445	6·5	320·4	1·030	333
30	92	6,176	67·1	6·6	336·5	441	6·2	326·6	1·031	340
1	81	5,510	68·0	6·2	342·7	424	5·9	332·5	1·031	343
2	72	4,942	68·3	6·0	348·7	412	5·5	338·0	1·032	345
3	62	4,305	69·4	5·6	354·3	391	5·2	343·2	1·032	355
4	51	3,560	69·8	5·1	359·4	356	4·8	348·0	1·034	358
5	44	3,104	70·6	5·0	364·4	345	4·5	352·5	1·034	363
6	41	2,905	70·9	5·1	369·5	363	4·2	356·7	1·036	367
7	33	2,341	70·9	4·7	374·2	333	3·9	360·6	1·037	370
8	29	2,068	71·3	4·8	379·0	347	3·6	364·2	1·041	374
9	24	1,735	72·3	4·8	383·8	347	3·3	367·5	1·045	381
40	18	1,319	73·3	4·5	388·3	330	3·1	370·6	1·048	387
1	11	824	74·9	3·7	392·0	275	2·8	373·4	1·050	395
2	6	444	74·0	3·0	395·0	222	2·5	375·9	1·051	397
3	2	142	71·0	2·0	397·0	142	2·2	378·1	1·050	401
4	..	..	..	..	..	..	2·0	380·1		
5	..	..	..	..	..	..	1·7	381·8		
6	..	..	..	..	..	..	1·5	383·3		
7	..	..	..	..	..	..	1·3	384·6		
8	..	..	..	..	..	..	1·1	385·7		
9	..	..	..	..	..	..	0·9	386·6		
50	..	..	..	..	..	..	0·8	387·4		

Total....................... 22,897

Average age of 397 Fellows ...... 57·7

Table III.—Showing number of Ordinary Fe

Year.	1848.	9.	1850.	1.	2.	3.	4.	5.	6.	7.	8.	9.	1860.	1.	2.	3.	4.	5.	6.	7.	8.
1848	14																				
9	14	15																			
1850	14	15	15																		
1	14	15	15	15																	
2	14	15	15	13	15																
3	14	14	15	13	14	16															
4	14	14	14	13	14	16	15														
5	14	14	14	13	14	16	15	15													
6	14	13	12	13	13	16	15	15	15												
7	14	13	12	13	13	16	15	15	15	15											
8	14	13	12	13	12	16	15	15	14	14	15										
9	14	12	12	13	11	16	15	15	14	14	15	14									
1860	14	11	12	12	10	16	14	15	14	14	15	14	15								
1	13	11	12	12	9	16	14	15	14	14	15	14	14	15							
2	12	11	11	12	9	16	14	15	14	14	15	14	14	15	15						
3	12	11	11	12	9	15	14	14	14	14	15	14	14	15	15	15					
4	12	11	11	12	9	15	13	14	14	13	14	14	14	15	15	15	15				
5	12	11	11	11	9	14	12	14	14	13	14	14	14	15	15	15	14	15			
6	12	11	11	11	9	14	12	13	14	13	12	14	14	15	15	15	14	15	15		
7	12	11	11	11	8	14	12	13	14	13	12	13	14	15	14	15	12	15	14	15	
8	11	11	11	11	6	13	11	13	14	13	12	13	14	15	13	15	12	14	14	15	15
9	11	11	11	11	5	12	11	13	14	13	12	13	14	15	13	15	12	14	14	15	15
1870	11	11	11	10	5	12	9	13	12	13	12	13	14	14	13	15	12	14	14	14	15
1	11	11	11	10	5	12	9	13	11	11	12	12	14	14	13	15	12	14	14	14	15
2	10	10	10	10	5	11	9	11	10	11	12	11	13	14	13	15	12	13	13	12	15
3	10	10	10	10	5	9	9	11	10	11	11	11	12	14	13	15	12	13	13	12	15
4	10	9	9	10	5	9	9	11	10	10	11	11	12	14	12	15	10	13	12	11	15
5	10	9	9	9	5	9	9	10	10	10	11	11	9	14	12	15	10	13	12	11	15
6	10	9	9	9	4	9	9	10	10	10	10	11	9	12	12	15	9	13	11	11	15
7	7	8	9	8	4	9	9	10	9	10	10	10	11	9	12	14	9	13	11	11	15
8	6	8	9	8	4	9	9	10	8	10	9	10	8	11	12	14	8	13	11	11	14
9	6	7	9	8	4	7	8	8	8	9	9	10	8	10	12	14	8	13	10	10	14
1880	6	6	9	8	4	7	7	8	8	9	9	10	8	10	11	13	8	13	10	10	14
1	5	6	9	8	4	7	5	6	7	9	8	10	8	10	10	11	8	12	10	10	13
2	4	5	9	8	4	7	5	6	6	9	8	10	8	9	10	11	8	12	10	10	13
3	4	5	9	7	4	6	5	6	5	9	8	8	8	8	9	11	8	12	10	10	13
4	3	5	9	7	4	5	5	6	3	8	8	8	8	8	7	10	8	12	8	10	13
5	3	4	9	7	4	5	5	6	3	7	8	7	8	8	6	9	8	11	7	10	12
6	3	4	8	6	4	4	5	6	3	7	8	7	8	7	6	8	7	11	7	10	12
7	3	4	8	6	4	4	4	6	3	6	8	7	8	7	5	8	6	11	7	9	12
8	3	4	7	6	4	4	4	6	1	6	8	7	8	7	5	8	6	11	7	9	10
9	3	4	5	6	4	4	4	6	1	6	8	7	7	6	4	8	6	10	7	9	9
1890	2	3	4	6	4	4	4	5	1	6	7	6	6	6	4	8	5	9	7	9	9
Aggregate ages of survivors in 1890	142	231	306	435	290	280	302	383	86	422	483	403	421	395	275	520	348	613	438	572	560

dinary Fellows Elected and Surviving in each year from 1848 to 1890.

7.	8.	9.	1870.	1.	2.	3.	4.	5.	6.	7.	8.	9.	1880.	1.	2.	3.	4.	5.	6.	7.	8.	9.	1890.
15																							
15	15																						
15	15	15																					
14	15	15	15																				
14	15	15	15	15																			
12	15	15	15	15	15																		
12	15	14	15	15	14	15																	
11	15	14	14	15	14	15	15																
11	15	14	14	15	14	15	15	15															
11	15	14	14	15	14	15	14	15	15														
11	15	14	14	15	14	15	14	15	14	15													
11	14	14	14	14	13	15	14	15	13	15	15												
10	14	14	13	13	13	15	13	15	12	15	15	15											
10	14	14	13	12	13	15	13	15	12	15	15	15	15										
10	13	13	13	12	13	15	13	15	12	15	15	15	15	15									
10	13	12	13	12	11	15	13	15	12	15	14	15	15	14	15								
10	13	12	13	11	11	14	12	14	12	15	14	15	15	14	15	15							
10	13	12	12	11	11	14	12	14	12	15	14	14	15	14	15	15	15						
10	12	12	12	11	11	14	12	14	12	15	14	14	15	14	14	14	15	15					
10	12	12	12	9	11	14	12	14	12	15	14	14	15	14	14	14	14	15	15				
9	12	12	12	9	10	14	12	14	12	15	13	14	15	13	14	14	13	15	15	15			
9	10	12	11	9	10	14	11	14	11	15	13	13	15	13	14	14	13	15	15	15	16		
9	9	11	10	9	10	13	10	13	10	15	13	12	15	13	13	14	13	15	15	15	16	15	
9	9	10	10	9	10	13	10	13	10	15	13	12	15	13	13	14	13	15	15	15	16	15	1
572	560	625	614	562	629	814	601	757	702	883	728	677	849	712	739	673	638	722	738	735	769	760	69

9.	1890.	Total from 1848.	Elected in year.	Lapsed in year.
		14	14	
		29	15	
		44	15	
		59	15	
		71	15	3
		85	16	2
		100	15	
		115	15	
		126	15	4
		141	15	
		153	15	3
		165	14	2
		176	15	4
		188	15	3
		201	15	2
		214	15	2
		226	15	3
		237	15	4
		249	15	3
		258	15	6
		266	15	7
		279	15	2
		287	15	7
		298	15	4
		300	15	13
		309	15	6
		315	15	9
		325	15	5
		333	15	7
		340	15	8
		343	15	12
		345	15	13
		355	15	5
		357	15	13
		363	15	9
		367	15	11
		370	15	12
		374	15	11
		381	15	8
		387	15	9
		395	16	8
15		397	15	13
15	15	401	15	11
760	694	23,436 years	Average age 58·4	

Table II.—Showing Ages of Fellows at time of Election, and duration of Life after E

Fellows elected.	1.		2.		3.		4.		5.		6.		7.		8.		9.		10.		11.		12.	
Year of election.	Age at election.	Life after.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.
1848	26	43	30	43	31	42	29	36	44	34	38	33	29	30	40	29	59	29	45	29	*42	24	65	20
9	30	42	40	42	35	42	39	41	35	36	41	33	32	31	50	30	34	28	50	25	*42	23	46	11
1850	35	41	38	41	40	41	29	41	31	40	31	39	35	39	39	38	32	36	*42	24	*42	22	*42	12
1	26	40	31	40	33	40	37	40	42	40	26	40	42	35	37	32	27	26	53	24	35	19	46	14
2	30	39	30	39	34	39	40	39	63	24	*42	17	*42	16	61	16	*42	15	27	9	59	8	33	7
3	26	38	28	38	33	38	41	38	56	33	49	31	28	30	35	26	43	26	51	20	57	20	33	19
4	36	37	37	37	39	37	42	37	46	33	43	27	46	27	36	26	58	25	*42	16	53	16	*42	14
5	31	36	31	36	44	36	47	36	50	36	42	35	47	26	56	26	28	24	37	23	62	20	43	17
6	51	35	45	32	46	32	47	28	57	28	54	27	64	26	43	25	39	22	40	21	43	16	36	15
7	29	34	29	34	31	34	39	34	39	34	51	34	53	30	40	28	40	27	61	22	*42	17	*42	14
8	24	33	31	33	35	33	36	33	39	33	*43	33	44	33	40	32	28	23	48	20	29	18	45	15
9	28	32	32	34	32	32	35	32	38	32	46	32	45	31	49	26	55	24	67	24	52	19	*43	13
1860	32	31	33	31	38	31	42	31	43	31	47	31	42	30	50	29	51	18	34	15	61	15	66	15
1	31	30	31	30	35	30	35	30	36	30	47	30	42	28	47	25	34	22	41	21	29	18	56	17
2	32	29	39	29	41	29	47	29	45	27	33	25	47	23	42	22	61	22	39	21	32	19	36	18
3	30	28	30	28	33	28	34	28	35	28	40	23	43	28	51	28	54	23	36	22	35	21	37	18
4	32	27	40	27	43	27	49	27	49	27	49	26	48	23	36	22	63	14	46	12	65	11	65	11
5	29	26	36	26	38	26	39	26	40	26	45	26	46	26	51	26	55	26	41	25	36	24	32	20
6	26	25	32	25	34	25	35	25	42	25	46	25	48	25	55	19	45	18	51	18	35	13	52	10
7	27	24	28	24	36	24	36	24	38	24	38	24	41	24	41	24	58	24	43	20	45	12	41	8
8	31	23	32	23	33	23	35	23	37	23	41	23	44	23	46	23	54	23	49	21	38	20	47	20
9	31	22	33	22	33	22	35	22	40	22	41	22	41	22	47	22	49	22	55	22	52	21	60	20
1870	32	21	36	21	37	21	37	21	37	21	37	21	40	21	40	21	45	21	46	21	46	19	55	18
1	34	20	36	20	38	20	41	20	41	20	42	20	45	20	51	20	54	20	37	15	57	15	43	12
2	30	19	36	19	36	19	36	19	40	19	42	19	52	19	53	19	53	19	61	19	40	15	36	10
3	30	18	32	18	36	18	38	18	40	18	42	18	45	18	46	18	46	18	48	18	55	18	59	18
4	30	17	33	17	34	17	38	17	39	17	41	17	48	17	49	17	58	17	61	17	40	15	51	14
5	26	16	28	16	29	16	32	16	35	16	39	16	42	16	44	16	45	16	51	16	55	16	58	16
6	28	15	31	15	33	15	33	15	37	15	*45	15	46	15	47	15	49	15	55	15	55	15	63	15
7	33	14	35	14	35	14	36	14	37	14	39	14	40	14	45	14	45	14	47	14	48	14	48	14
8	28	13	29	13	31	13	32	13	40	13	42	13	44	13	44	13	44	13	45	13	51	13	58	13
9	28	12	31	12	34	12	40	12	41	12	41	12	46	12	48	12	52	12	52	12	54	12	66	12
1880	35	11	36	11	37	11	37	11	38	11	39	11	44	11	*45	11	45	11	46	11	46	11	47	11
1	32	10	34	10	36	10	37	10	37	10	40	10	41	10	47	10	53	10	54	10	54	10	56	10
2	28	9	34	9	35	9	35	9	39	9	40	9	*45	9	48	9	49	9	50	9	50	9	51	9
3	31	8	32	8	38	8	39	8	40	8	40	8	42	8	43	8	43	8	48	8	49	8	58	8
4	28	7	30	7	30	7	31	7	35	7	36	7	40	7	43	7	48	7	50	7	56	7	60	7
5	33	6	33	6	35	6	35	6	36	6	37	6	37	6	43	6	44	6	44	6	48	6	48	6
6	28	5	29	5	32	5	34	5	37	5	38	5	43	5	47	5	47	5	48	5	50	5	50	5
7	32	4	33	4	36	4	38	4	40	4	42	4	43	4	44	4	*45	4	46	4	50	4	51	4
8	33	3	34	3	36	3	36	3	38	3	41	3	41	3	43	3	43	3	45	3	46	3	47	3
9	33	2	35	2	35	2	40	2	41	2	43	2	44	2	46	2	46	2	50	2	57	2	61	2
1890	30	1	30	1	31	1	32	1	36	1	37	1	41	1	48	1	49	1	50	1	50	1	59	1

Note.—The asterisk at certain entries implies that the actual age of the Fellow has not been recorded, and that the ave
The entries to the left of the thick black line refer to Fellows surviving in 1891, those to the right of that line re

12.		13.		14.		15.		16.		Average age at election.	Average age of survivors in 1891.	Number of survivors in 1891.	10 years' mean of age at election.	Least age at election.	Greatest age at election.
Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.	Age.	Life.						
65	20	40	14	63	13	..	..			42	71	2		26	65
46	11	46	10	*42	7	*42	3			40	77	3		30	50
*42	12	*42	6	49	6	*42	3			38	77	4		29	49
46	14	*42	9	*42	1	*42	1			37	72	6		26	53
33	7	42	6	*42	3	*42	1			42	73	4	42·2	27	63
33	19	56	15	42	16	53	12	58	10	43	70	4		26	58
*42	14	*42	11	*42	10	54	6			44	76	4		36	58
43	17	59	17	50	11	61	3			46	77	5		23	62
36	15	43	14	*42	14	52	2			47	86	1		36	64
*42	14	63	14	42	7	33	1			42	70	6		29	63
45	15	44	8	49	8	*43	6			39	68	7		24	49
*43	13	*43	12	*43	8	..	..			43	67	6		28	67
66	15	60	13	*43	12	45	1			46	70	6		32	66
56	17	42	15	49	15	*43	9			40	66	6		29	56
36	18	63	13	*43	6	*43	5			43	69	4		32	63
37	18	47	18	*43	17	*43	14			39	65	8	43·0	30	54
65	11	41	3	57	3	69	1			50	70	5		32	69
32	20	52	17	57	7	66	3			44	68	9		29	66
52	10	60	9	*43	6	*43	1			43	63	7		26	60
41	8	39	5	64	5	*43	3			42	64	9		27	64
47	20	50	17	66	13	51	10			44	62	9		31	66
60	20	39	13	76	12	*45	4			45	63	10		31	76
55	18	47	14	59	9	48	5			44	61	10		32	59
43	12	59	9	40	8	46	7			45	62	9		34	59
36	10	45	10	42	6	87	1			46	63	10		30	87
59	18	63	18	56	16	61	10			46	63	13	44·8	30	63
51	14	66	9	29	5	64	2			45	60	10		30	66
58	16	65	16	63	14	53	8			44	58	13		26	65
63	15	30	3	78	2	40	1			45	56	12		23	78
48	14	53	14	55	14	77	14			45	59	15		33	77
58	13	71	13	75	9	27	4			44	56	13		23	75
66	12	76	10	46	9	70	5			43	56	12		23	76
47	11	54	11	67	11	68	11			46	57	15		35	68
56	10	61	10	58	6	69	1			47	55	13		32	69
51	9	54	9	55	9	50	3			44	53	14		28	55
58	8	66	8	57	7	42	2			45	52	13	45·2	31	66
60	7	60	7	69	3	39	1			44	49	13		28	69
48	6	50	6	50	6	59	6			42	48	15		33	59
50	5	53	5	54	5	75	5			44	49	15		28	75
51	4	55	4	59	4	61	4			45	49	15		32	61
47	3	54	3	57	3	60	3	67	0·3	45	48	16		33	67
61	2	63	2	67	2	69	2			49	51	15		33	69
59	1	59	1	61	1	66	1			45	46	15		30	66

hat the average age for the period has been adopted to complete the table.
that line refer to Fellows who have lapsed.
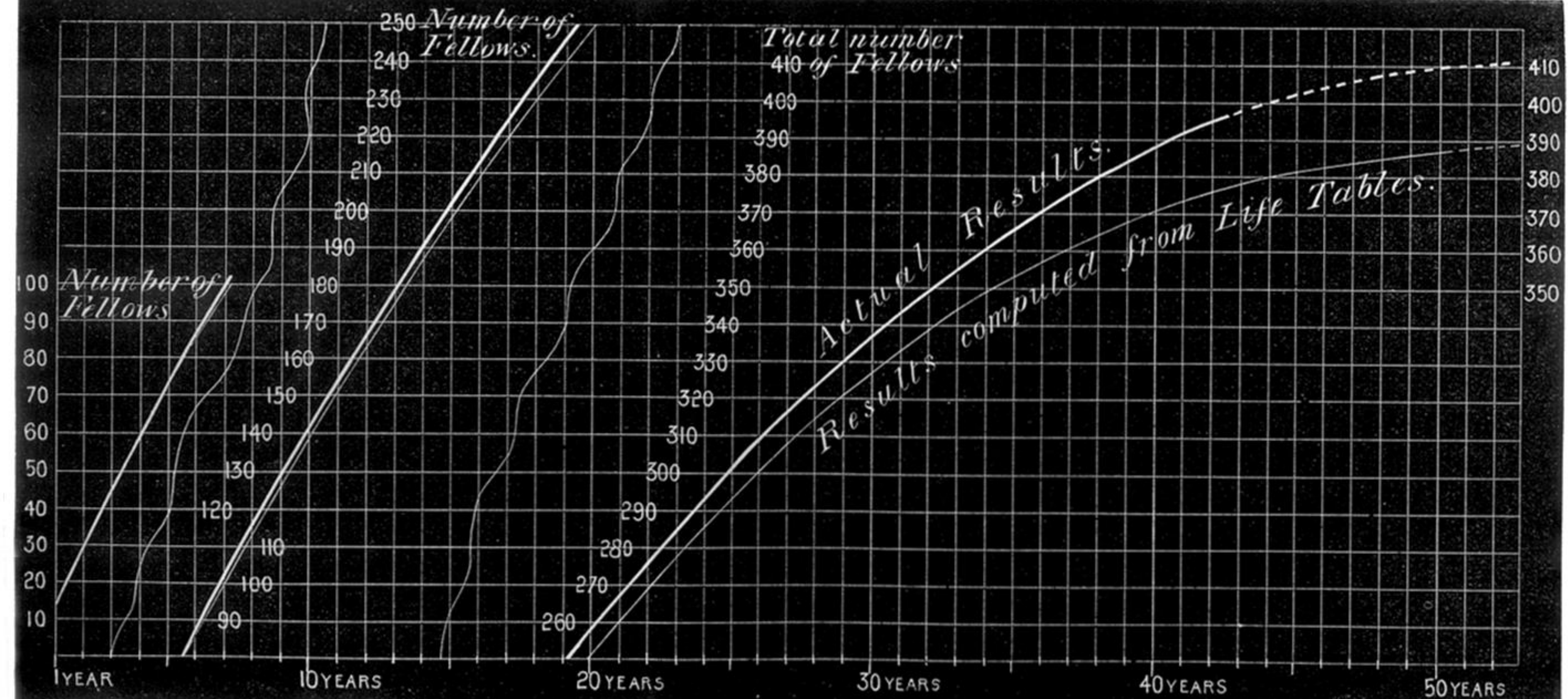
Graphical representation of chief results given in Table IV.

Table III.—Showing number of Ordinary Fellows Elected and Surviving in each year from 1848 to 1890.

Year.	1848.	9.	1850.	1.	2.	3.	4.	5.	6.	7.	8.	9.	1860.	1.	2.	3.	4.	5.	6.	7.	8.	9.	1870.	1.	2.	3.	4.	5.	6.	7.	8.	9.	1880.	1.	2.	3.	4.	5.	6.	7.	8.	9.	1890.	Total from 1848.	Elected in year.	Lapsed in year.
1848	14																																											14	14	
9	14	15																																										29	15	
1850	14	15	15																																									44	15	
1	14	15	15	15																																								59	15	
2	14	15	15	13	15																																							71	15	3
3	14	14	15	13	14	16																																						85	16	2
4	14	14	14	13	14	16	15																																					100	15	
5	14	14	14	13	14	16	15	15																																				115	15	
6	14	13	12	13	13	16	15	15	15																																			126	15	4
7	14	13	12	13	13	16	15	15	15	15																																		141	15	
8	14	13	12	13	12	16	15	15	14	14	15																																	153	15	3
9	14	12	12	13	11	16	15	15	14	14	15	14																																165	14	2
1860	14	11	12	12	10	16	14	15	14	14	15	14	15																															176	15	4
1	13	11	12	12	9	16	14	15	14	14	15	14	14	15																														188	15	3
2	12	11	11	12	9	16	14	15	14	14	15	14	14	15	15																													201	15	2
3	12	11	11	12	9	15	14	14	14	14	15	14	14	15	15	15																												214	15	2
4	12	11	11	12	9	15	13	14	14	13	14	14	14	15	15	15	15																											226	15	3
5	12	11	11	11	9	14	12	14	14	13	14	14	14	15	15	15	14	15																										237	15	4
6	12	11	11	11	9	14	12	13	14	13	12	14	14	15	15	15	14	15	15																									249	15	3
7	12	11	11	11	8	14	12	13	14	13	12	13	14	15	14	15	12	15	14	15																								258	15	6
8	11	11	11	11	6	13	11	13	14	13	12	13	14	15	13	15	12	14	14	15	15																							266	15	7
9	11	11	11	11	5	12	11	13	14	13	12	13	14	15	13	15	12	14	14	15	15	15																						279	15	2
1870	11	11	11	10	5	12	9	13	12	13	12	13	14	14	13	15	12	14	14	14	15	15	15																					287	15	7
1	11	11	11	10	5	12	9	12	12	11	11	14	14	13	15	15	11	14	15	15	15	15	15	15																				298	15	4
2	10	10	10	10	5	11	9	11	10	11	12	11	13	14	13	15	12	13	13	12	15	15	15	15	15																			300	15	13
3	10	10	10	10	5	9	9	11	10	11	11	12	14	13	13	12	15	14	15	15	14	15	15	15	14	15																		309	15	6
4	10	9	9	10	5	9	9	10	10	11	11	12	14	10	13	12	15	14	14	15	14	14	15	14	14	15	15																	315	15	9
5	10	9	9	9	5	9	9	10	10	11	11	9	14	12	12	11	15	14	14	15	14	15	15	15	15	15	15	15																325	15	5
6	10	9	9	9	4	9	9	10	10	10	11	9	12	12	15	9	13	11	11	15	14	14	15	14	15	14	15	15	15															333	15	7
7	7	8	9	8	4	9	9	10	9	10	11	9	12	12	14	9	13	11	11	15	14	14	15	14	15	15	14	15	14	15														340	15	8
8	6	8	9	8	4	9	8	10	8	10	9	10	8	11	12	14	8	13	11	11	14	14	14	14	13	15	14	15	13	15	15													343	15	12
9	6	7	9	8	4	7	8	8	8	9	9	10	8	10	12	14	8	13	10	10	14	14	13	13	13	15	13	15	12	15	15	15												345	15	13
1880	6	6	9	8	4	7	7	8	8	9	9	10	8	10	11	13	8	13	10	10	14	14	13	12	13	15	12	15	12	15	15	15	15											355	15	5
1	5	6	9	8	4	7	5	7	9	8	10	8	10	10	11	8	12	10	10	13	13	13	12	13	15	12	15	13	15	15	15	15	15	15										357	15	13
2	4	5	9	8	4	7	5	6	9	8	10	8	9	10	11	8	12	10	10	13	12	13	12	11	15	13	15	12	15	14	15	15	14	15	15									363	15	9
3	4	5	9	7	4	6	5	5	9	8	8	8	8	12	10	8	12	10	12	12	11	11	14	12	14	12	15	14	15	14	14	15	15	15	15	15								367	15	11
4	3	5	9	7	4	5	5	3	8	8	8	10	8	12	11	11	12	12	15	14	12	15	14	14	12	14	12	15	14	14	15	15	15	15	15	15	15							370	15	12
5	3	4	9	7	4	5	5	7	8	7	8	8	6	9	8	11	7	10	12	12	11	11	14	12	14	14	15	14	14	15	14	14	14	14	15	15	15	15						374	15	11
6	3	4	8	6	4	4	5	6	8	3	7	8	7	8	6	11	7	10	12	12	9	11	14	12	14	12	15	14	14	15	13	14	14	15	14	14	14	15	15					381	15	8
7	3	4	7	6	4	4	4	6	1	6	8	7	8	6	11	7	9	12	12	9	10	14	12	14	11	14	12	15	13	14	13	15	13	14	14	15	15	16					387	15	9
8	3	4	7	6	4	4	4	6	1	6	8	7	7	5	8	11	7	9	10	12	11	9	10	14	11	14	12	15	13	13	15	13	14	14	14	15	16	15					395	16	8
9	3	4	5	6	4	4	4	6	1	6	8	7	7	6	4	8	6	10	7	9	9	11	10	9	10	13	10	13	12	15	13	12	15	13	14	14	15	15					397	15	13
1890	2	3	4	6	4	4	4	5	1	6	7	6	6	6	4	8	5	9	7	9	9	10	10	9	10	13	10	13	12	15	13	14	13	13	15	15	15	16	15	15			15	401	15	11
Aggregate ages of survivors in 1890	142	231	306	435	290	280	302	383	86	422	483	403	421	395	275	520	348	613	438	572	560	625	614	562	629	814	601	757	702	883	728	677	849	712	739	673	638	722	738	735	760	760	694	23,436 years	Average age 58·4	

Table II.—Showing Ages of Fellows at time of Election, and duration of Life after Election, between the years 1848 and 1890.

Year of election	1. Age	1. Life	2. Age	2. Life	3. Age	3. Life	4. Age	4. Life	5. Age	5. Life	6. Age	6. Life	7. Age	7. Life	8. Age	8. Life	9. Age	9. Life	10. Age	10. Life	11. Age	11. Life	12. Age	12. Life	13. Age	13. Life	14. Age	14. Life	15. Age	15. Life	16. Age	16. Life	Average age at election	Average age of survivors in 1891	Number of survivors in 1891	10 years' mean of age at election	Least age at election	Greatest age at election
1848	26	43	30	43	31	42	29	36	44	34	38	33	29	30	40	29	59	29	45	29	*42	24	65	20	40	14	63	13	..	..			42	71	2		26	65
9	30	42	40	42	35	42	39	41	35	36	41	33	32	31	50	30	34	28	50	25	*42	23	46	11	46	10	*42	7	*42	3			40	77	3		30	50
1850	35	41	38	41	40	41	29	41	31	40	31	39	35	39	39	38	32	36	*42	24	*42	22	*42	12	*42	6	49	6	*42	3			38	77	4		29	49
1	26	40	31	40	33	40	37	40	42	40	26	40	42	35	37	32	27	26	53	24	35	19	46	14	*42	9	*42	1	*42	1			37	72	6		26	53
2	30	39	30	39	34	39	40	39	63	24	*42	17	*42	16	61	16	*42	15	27	9	59	8	33	7	42	6	*42	3	*42	1			42	73	4	42·2	27	63
3	26	38	28	38	33	38	41	38	56	33	49	31	28	30	35	26	43	26	51	20	57	20	33	19	56	15	42	16	53	12	58	10	43	70	4		26	58
4	36	37	37	37	39	37	42	37	46	33	43	27	46	27	36	26	58	25	*42	16	53	16	*42	14	*42	11	*42	10	54	6			44	76	4		36	58
5	31	36	31	36	44	36	47	36	50	36	42	35	47	26	56	23	28	24	37	23	62	20	43	17	59	17	50	11	61	3			46	77	5		28	62
6	51	35	45	32	46	32	47	28	57	28	54	27	64	26	43	25	30	22	40	21	43	16	36	15	43	14	*42	14	52	2			47	86	1		36	64
7	29	34	29	34	31	34	39	34	39	34	51	34	53	30	40	28	40	27	61	22	*42	17	*42	14	63	14	42	7	33	1			42	70	6		29	63
8	24	33	31	33	35	33	36	33	39	33	*43	33	44	33	40	32	28	23	48	20	29	18	45	15	41	8	49	8	*43	6			39	68	7		24	49
9	28	32	32	34	32	32	35	32	38	32	46	32	45	31	49	26	55	24	67	24	52	19	*43	13	*43	12	*43	8	..	..			43	67	6		28	67
1860	32	31	33	31	38	31	42	31	43	31	47	31	42	30	50	29	51	18	34	15	61	15	65	15	60	13	*43	12	45	1			46	70	6		32	66
1	31	30	31	30	35	30	35	30	36	30	47	30	42	28	47	25	34	22	41	21	29	18	56	17	42	15	49	15	*43	9			40	66	6		29	56
2	32	29	39	29	41	29	47	29	45	27	33	25	47	23	42	22	61	22	39	21	32	19	36	18	43	13	*43	6	*43	5			43	69	4		32	63
3	30	28	30	28	33	28	34	28	35	28	40	28	43	28	51	28	54	23	36	22	35	21	37	18	47	18	*43	17	*43	14			39	65	8	43·0	30	54
4	32	27	40	27	43	27	49	27	49	27	49	26	48	23	36	22	63	14	46	12	65	11	65	11	41	3	57	3	69	1			50	70	5		32	69
5	29	26	36	26	38	26	39	26	40	26	45	26	46	26	51	26	55	26	41	25	36	24	32	20	52	17	57	7	66	3			44	68	9		29	66
6	26	25	32	25	34	25	35	25	42	25	46	25	48	25	55	19	45	18	51	18	35	13	52	10	60	9	*43	6	*43	1			43	63	7		26	60
7	27	24	28	24	36	24	36	24	38	24	38	24	41	24	41	24	58	24	43	20	45	12	41	8	39	5	64	5	*43	3			42	64	9		27	64
8	31	23	32	23	33	23	35	23	37	23	41	23	44	23	46	23	54	23	49	21	38	20	47	20	50	17	66	13	51	10			44	62	9		31	66
9	31	22	33	22	33	22	35	22	40	22	41	22	41	22	47	22	49	22	55	22	52	21	60	20	39	13	76	12	*45	4			45	63	10		31	76
1870	32	21	36	21	37	21	37	21	37	21	37	21	40	21	40	21	45	21	46	21	46	19	55	18	47	14	59	9	48	5			44	61	10		32	59
1	34	20	36	20	38	20	41	20	41	20	42	20	45	20	51	20	54	20	37	15	57	15	43	12	59	9	40	8	46	7			45	62	9		34	59
2	30	19	36	19	36	19	36	19	40	19	42	19	52	19	53	19	53	19	61	19	40	15	36	10	45	10	42	6	87	1			46	63	10		30	87
3	20	18	32	18	36	18	38	18	40	18	42	18	45	18	46	18	46	18	48	18	55	18	59	18	63	18	56	16	61	10			46	63	13	44·8	30	63
4	30	17	33	17	34	17	38	17	39	17	41	17	48	17	49	17	58	17	61	17	40	15	51	14	66	9	29	5	64	2			45	60	10		30	66
5	26	16	28	16	29	16	32	16	35	16	39	16	42	16	44	16	45	16	51	16	55	16	58	16	65	16	63	14	53	8			44	58	13		26	65
6	28	15	31	15	33	15	33	15	37	15	*45	15	46	15	47	15	49	15	55	15	55	15	63	15	30	3	78	2	40	1			45	56	12		28	78
7	33	14	35	14	35	14	36	14	37	14	39	14	40	14	45	14	45	14	47	14	48	14	48	14	53	14	55	14	77	14			45	59	15		33	77
8	28	13	29	13	31	13	32	13	40	13	42	13	44	13	44	13	44	13	45	13	51	13	58	13	71	13	75	9	27	4			44	56	13		28	75
9	28	12	31	12	34	12	40	12	41	12	41	12	46	12	48	12	52	12	52	12	54	12	66	12	76	10	46	9	70	5			43	56	12		28	76
1880	35	11	36	11	37	11	37	11	38	11	39	11	44	11	*45	11	45	11	46	11	46	11	47	11	54	11	67	11	68	11			46	57	15		35	68
1	32	10	34	10	36	10	37	10	37	10	40	10	41	10	47	10	53	10	54	10	54	10	56	10	61	10	58	6	69	1			47	55	13		32	69
2	28	9	34	9	35	9	35	9	39	9	40	9	*45	9	48	9	49	9	50	9	50	9	51	9	54	9	55	9	50	3			44	53	14	45·2	28	55
3	31	8	32	8	38	8	39	8	40	8	40	8	42	8	43	8	43	8	48	8	49	8	58	8	66	8	57	7	42	2			45	52	13		31	66
4	28	7	30	7	30	7	31	7	35	7	36	7	40	7	43	7	48	7	50	7	56	7	60	7	60	7	69	3	39	1			44	49	13		28	69
5	33	6	33	6	35	6	35	6	36	6	37	6	37	6	43	6	44	6	44	6	48	6	48	6	50	6	50	6	59	6			42	48	15		33	59
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7	32	4	33	4	36	4	38	4	40	4	42	4	43	4	44	4	*45	4	46	4	50	4	51	4	55	4	59	4	61	4			45	49	15		32	61
8	33	3	34	3	36	3	36	3	38	3	41	3	41	3	43	3	43	3	45	3	46	3	47	3	54	3	57	3	60	3	67	0·3	45	48	16		33	67
9	33	2	35	2	35	2	40	2	41	2	43	2	44	2	46	2	46	2	50	2	57	2	61	2	63	2	67	2	69	2			49	51	15		33	69
1890	30	1	30	1	31	1	32	1	36	1	37	1	41	1	48	1	49	1	50	1	50	1	59	1	59	1	61	1	66	1			45	46	15		30	66

Note.—The asterisk at certain entries implies that the actual age of the Fellow has not been recorded, and that the average age for the period has been adopted to complete the table. The entries to the left of the thick black line refer to Fellows surviving in 1891, those to the right of that line refer to Fellows who have lapsed.